

CHAPTER 135
TECHNICAL STANDARDS AND CORRECTIVE ACTION REQUIREMENTS FOR
OWNERS AND OPERATORS OF UNDERGROUND STORAGE TANKS

[Prior to 12/3/86, Water, Air and Waste Management[900]]

567—135.1(455B) Authority, purpose and applicability.

135.1(1) Authority. Iowa Code chapter 455B, division IV, part 8, authorizes the department to regulate underground tanks used for storage of regulated substances, and to adopt rules relating to detection, prevention and correction of releases of regulated substances from such tanks, maintenance of financial responsibility by owners or operators of such tanks, new tank performance standards, notice and reporting requirements, and designation of regulated substances.

135.1(2) Purpose. The purpose of these rules is to protect the public health and safety and the natural resources of Iowa by timely and appropriate detection, prevention and correction of releases of regulated substances from underground storage tanks (UST).

135.1(3) Applicability.

a. The requirements of this chapter apply to all owners and operators of a UST system as defined in 135.2(455B) except as otherwise provided in paragraphs “*b*,” “*c*,” and “*d*” of this subrule. Any UST system listed in paragraph “*c*” of this subrule must meet the requirements of 135.1(4).

b. The following UST systems are excluded from the requirements of this chapter:

(1) Any UST system holding hazardous wastes listed or identified under Subtitle C of the Solid Waste Disposal Act, or a mixture of such hazardous waste and other regulated substances.

(2) Any wastewater treatment tank system that is part of a wastewater treatment facility regulated under Section 402 or 307(b) of the federal Clean Water Act.

(3) Equipment or machinery that contains regulated substances for operational purposes such as hydraulic lift tanks and electrical equipment tanks.

(4) Any UST system whose capacity is 110 gallons or less.

(5) Any UST system that contains a de minimus concentration of regulated substances.

(6) Any emergency spill or overflow containment UST system that is expeditiously emptied after use.

c. Deferrals. Rules 135.3(455B), 135.4(455B), 135.5(455B), 135.6(455B) and 135.9(455B) do not apply to any of the following types of UST systems:

(1) Wastewater treatment tank systems;

(2) Any UST systems containing radioactive material that are regulated under the federal Atomic Energy Act of 1954 (42 U.S.C. 2011 and following);

(3) Any UST system that is part of an emergency generator system at nuclear power generation facilities regulated by the Nuclear Regulatory Commission under 10 CFR 50 Appendix A;

(4) Airport hydrant fuel distribution systems; and

(5) UST systems with field-constructed tanks.

d. Deferrals. Rule 135.5(455B) does not apply to any UST system that stores fuel solely for use by emergency power generators.

e. Nonpetroleum underground storage tank systems. Rules 135.8(455B) to 135.12(455B) do not apply to any nonpetroleum underground storage tank system except as otherwise provided for by the department.

135.1(4) Interim prohibition for deferred UST systems.

a. No person may install a UST system listed in 135.1(3) “*c*” for the purpose of storing regulated substances unless the UST system (whether of single- or double-wall construction):

(1) Will prevent releases due to corrosion or structural failure for the operational life of the UST system;

(2) Is cathodically protected against corrosion, constructed of noncorrodible material, steel clad with a noncorrodible material, or designed in a manner to prevent the release or threatened release of any stored substance; and

(3) Is constructed or lined with material that is compatible with the stored substance.

b. Notwithstanding paragraph “a” of this subrule, a UST system without corrosion protection may be installed at a site that is determined by a corrosion expert not to be corrosive enough to cause it to have a release due to corrosion during its operating life. Owners and operators must maintain records that demonstrate compliance with the requirements of this paragraph for the remaining life of the tank.

NOTE: The National Association of Corrosion Engineers Standard RP-02-85, “Control of External Corrosion on Metallic Buried, Partially Buried, or Submerged Liquid Storage Systems,” may be used as guidance for complying with 135.1(4) “b.”

567—135.2(455B) Definitions.

“*Aboveground release*” means any release to the surface of the land or to surface water. This includes, but is not limited to, releases from the aboveground portion of a UST system and aboveground releases associated with overfills and transfer operations as the regulated substance moves to or from a UST system.

“*Active remediation*” means corrective action undertaken to reduce contaminant concentrations by other than passive remediation or monitoring.

“*Ancillary equipment*” means any devices including, but not limited to, such devices as piping, fittings, flanges, valves, and pumps used to distribute, meter, or control the flow of regulated substances to and from a UST.

“*ASTM*” means the American Society of Testing and Materials.

“*Bedrock*” means the rock, usually solid, underlying soil or any other unconsolidated surficial cover.

“*Below-ground release*” means any release to the subsurface of the land and to groundwater. This includes, but is not limited to, releases from the below-ground portions of an underground storage tank system and below-ground releases associated with overfills and transfer operations as the regulated substance moves to or from an underground storage tank.

“*Beneath the surface of the ground*” means beneath the ground surface or otherwise covered with earthen materials.

“*Best available technology*” means those practices which most appropriately remove, treat, or isolate contaminants from groundwater, soil or associated environment, as determined through professional judgment considering actual equipment or techniques currently in use, published technical articles, site hydrogeology and research results, engineering and groundwater professional reference materials, consultation with experts in the field, capital and operating costs, and guidelines or rules of other regulatory agencies.

“*Best management practices*” means maintenance procedures, schedule of activities, prohibition of practices, and other management practices, or a combination thereof, which, after problem assessment, is determined to be the most effective means of monitoring and preventing additional contamination of the groundwater and soil.

“*Carcinogenic risk*” means the incremental risk of a person developing cancer over a lifetime as a result of exposure to a chemical, expressed as a probability such as one in a million (10^{-6}). For carcinogenic chemicals of concern, probability is derived from application of certain designated exposure assumptions and a slope factor.

“*Cathodic protection*” is a technique to prevent corrosion of a metal surface by making that surface the cathode of an electrochemical cell. For example, a tank system can be cathodically protected through the application of either galvanic anodes or impressed current.

“Cathodic protection tester” means a person who can demonstrate an understanding of the principles and measurements of all common types of cathodic protection systems as applied to buried or submerged metal piping and tank systems. At a minimum, such persons must have education and experience in soil resistivity, stray current, structure-to-soil potential, and component electrical isolation measurements of buried metal piping and tank systems.

“CERCLA” means the Comprehensive Environmental Response, Compensation, and Liability Act of 1980.

“Certified groundwater professional” means a person certified pursuant to 1995 Iowa Code section 455G.18 and 567—Chapter 134.

“Change-in-service” means changing the use of a tank system from a regulated to a nonregulated use.

“Chemicals of concern” means the compounds derived from petroleum-regulated substances which are subject to evaluation for purposes of applying risk-based corrective action decision making. These compounds are benzene, ethylbenzene, toluene, and xylenes (BTEX) and naphthalene, benzo(a)pyrene, benz(a)anthracene, and chrysene. (NOTE: Measurement of these last four constituents may be done by a conversion method from total extractable hydrocarbons, see subrule 135.8(3).)

“Compatible” means the ability of two or more substances to maintain their respective physical and chemical properties upon contact with one another for the design life of the tank system under conditions likely to be encountered in the UST.

“Conduit” means underground structures which act as pathways and receptors for chemicals of concern, including but not limited to gravity drain lines and sanitary or storm sewers.

“Connected piping” means all underground piping including valves, elbows, joints, flanges, and flexible connectors attached to a tank system through which regulated substances flow. For the purpose of determining how much piping is connected to any individual UST system, the piping that joins two UST systems should be allocated equally between them.

“Consumptive use” with respect to heating oil means consumed on the premises.

“Corrective action” means an action taken to reduce, minimize, eliminate, clean up, control or monitor a release to protect the public health and safety or the environment. Corrective action includes, but is not limited to, excavation of an underground storage tank for the purpose of repairing a leak or removal of a tank, removal of contaminated soil, disposal or processing of contaminated soil, cleansing of groundwaters or surface waters, natural biodegradation, institutional controls, technological controls and site management practices. Corrective action does not include replacement of an underground storage tank. Corrective action specifically excludes third-party liability.

“Corrosion expert” means a person who, by reason of thorough knowledge of the physical sciences and the principles of engineering and mathematics acquired by a professional education and related practical experience, is qualified to engage in the practice of corrosion control on buried or submerged metal piping systems and metal tanks. Such a person must be accredited or certified as being qualified by the National Association of Corrosion Engineers or be a registered professional engineer who has certification or licensing that includes education and experience in corrosion control of buried or submerged metal piping systems and metal tanks.

“Department” means Iowa department of natural resources.

“Dielectric material” means a material that does not conduct direct electrical current. Dielectric coatings are used to electrically isolate UST systems from the surrounding soils. Dielectric bushings are used to electrically isolate portions of the UST systems (e.g., tank from piping).

“Drinking water well” means any groundwater well used as a source for drinking water by humans and groundwater wells used primarily for the final production of food or medicine for human consumption in facilities routinely characterized with the Standard Industrial Codes (SIC) group 283 for drugs and 20 for foods.

“Electrical equipment” means underground equipment that contains dielectric fluid that is necessary for the operation of equipment such as transformers and buried electrical cable.

“Enclosed space” means space which can act as a receptor or pathway capable of creating a risk of explosion or inhalation hazard to humans and includes “explosive receptors” and “confined spaces.” Explosive receptors means those receptors designated in these rules which are evaluated for explosive risk. Confined spaces means those receptors designated in these rules for evaluation of vapor inhalation risks.

“Excavation zone” means the volume containing the tank system and backfill material bounded by the ground surface, walls, and floor of the pit and trenches into which the UST system is placed at the time of installation.

“Existing tank system” means a tank system used to contain an accumulation of regulated substances or for which installation has commenced on or before January 14, 1987. Installation is considered to have commenced if:

The owner or operator has obtained all federal, state, and local approvals or permits necessary to begin physical construction of the site or installation of the tank system; and if,

1. Either a continuous on-site physical construction or installation program has begun; or,
2. The owner or operator has entered into contractual obligations, which cannot be canceled or modified without substantial loss, for physical construction at the site or installation of the tank system to be completed within a reasonable time.

“Farm tank” is a tank located on a tract of land devoted to the production of crops or raising animals, including fish, and associated residences and improvements. A farm tank must be located on the farm property. “Farm” includes fish hatcheries, rangeland and nurseries with growing operations.

“Flow-through process tank” is a tank that forms an integral part of a production process through which there is a steady, variable, recurring, or intermittent flow of materials during the operation of the process. Flow-through process tanks do not include tanks used for the storage of materials prior to their introduction into the production process or for the storage of finished products or by-products from the production process.

“Free product” refers to a regulated substance that is present as a nonaqueous phase liquid (e.g., liquid not dissolved in water).

“Gathering lines” means any pipeline, equipment, facility, or building used in the transportation of oil or gas during oil or gas production or gathering operations.

“Groundwater ingestion pathway” means a pathway through groundwater by which chemicals of concern may result in exposure to a human receptor as specified in rules applicable to Tier 1, Tier 2 and Tier 3.

“Groundwater plume” means the extent of groundwater impacted by the release of chemicals of concern.

“Groundwater to plastic water line pathway” means a pathway through groundwater which leads to a plastic water line.

“Groundwater vapor to enclosed space pathway” means a pathway through groundwater by which vapors from chemicals of concern may lead to a receptor creating an inhalation or explosive risk hazard.

“Hazardous substance UST system” means an underground storage tank system that contains a hazardous substance defined in Section 101(14) of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (but not including any substance regulated as a hazardous waste under subtitle C) or any mixture of such substances and petroleum, and which is not a petroleum UST system.

“Hazard quotient” means the ratio of the level of exposure of a chemical of concern over a specified time period to a reference dose for that chemical of concern derived for a similar exposure period. Unless otherwise specified, the hazard quotient designated in these rules is one.

“Heating oil” means petroleum that is No. 1, No. 2, No. 4-light, No. 4-heavy, No. 5-light, No. 5-heavy, and No. 6 technical grades of fuel oil; other residual fuel oils (including Navy Special Fuel Oil

and Bunker C); and other fuels when used as substitutes for one of these fuel oils. Heating oil is typically used in the operation of heating equipment, boilers, or furnaces.

"Highly permeable soils" means for the purpose of UST closures: fractured bedrock, any soils with a hydraulic conductivity rate greater than 0.3 meters per day, or any soil material classified by the Unified Soil Classification System as published by the United States Department of the Interior or ASTM designation as (1) GW - well graded gravel, gravel-sand mixtures, little or no fines, (2) GP - poorly graded gravel, gravel-sand mixtures, little or no fines, (3) SW - well graded sands, gravelly sands, little or no fines, or (4) SP - poorly graded sands, gravelly sands, little or no fines.

"Hydraulic conductivity" means the rate of water movement through the soil measured in meters per day (m/d) as determined by the following methods. For a saturated soil, the Bouwer-Rice method or its equivalent shall be used. For unsaturated soil, use a Guelph permeameter or an equivalent in situ constant-head permeameter in a boring finished above the water table. If an in situ method cannot be used for unsaturated soil because of depth, or if the soil is homogeneous and lacks flow-conducting channels, fractures, cavities, etc., laboratory measurement of hydraulic conductivity is acceptable.

If laboratory methods are used, collect undisturbed soil samples using a thin-walled tube sampler in accordance with American Society of Testing and Materials (ASTM) Standard D1587. Samples shall be clearly marked, preserved and transported to the laboratory. The laboratory shall measure hydraulic conductivity using a constant-head permeameter in accordance with ASTM Standard D2434 or a falling-head permeameter in accordance with accepted methodology.

"Hydraulic lift tank" means a tank holding hydraulic fluid for a closed-loop mechanical system that uses compressed air or hydraulic fluid to operate lifts, elevators, and other similar devices.

"Institutional controls" means the restriction on use or access (for example, fences, deed restrictions, restrictive zoning) to a site or facility to eliminate or minimize potential exposure to a chemical(s) of concern. Institutional controls include any of the following:

1. A law of the United States or the state;
2. A regulation issued pursuant to federal or state laws;
3. An ordinance or regulation of a political subdivision in which real estate subject to the institutional control is located;
4. A restriction on the use of or activities occurring at real estate which are embodied in a covenant running with the land which:
 - Contains a legal description of the real estate in a manner which satisfies Iowa Code section 558.1 et seq.;
 - Is properly executed, in a manner which satisfies Iowa Code section 558.1 et seq.;
 - Is recorded in the appropriate office of the county in which the real estate is located;
 - Adequately and accurately describes the institutional control; and
 - Is in the form of a covenant as set out in Appendix C or in such a manner reasonably acceptable to the department.
5. Any other institutional control the owner or operator can reasonably demonstrate to the department which will reduce the risk from a release throughout the period necessary to ensure that no applicable target risk is likely to be exceeded.

"Liquid trap" means sumps, well cellars, and other traps used in association with oil and gas production, gathering, and extraction operations (including gas production plants), for the purpose of collecting oil, water, and other liquids. These liquid traps may temporarily collect liquids for subsequent disposition or reinjection into a production or pipeline stream, or may collect and separate liquids from a gas stream.

"Maintenance" means the normal operational upkeep to prevent an underground storage tank system from releasing product.

"MCLs" means the drinking water primary maximum contaminant levels set out in 567—41.3(455B).

“Motor fuel” means petroleum or a petroleum-based substance that is motor gasoline, aviation gasoline, No. 1 or No. 2 diesel fuel, or any grade of gasohol, and is typically used in the operation of a motor engine.

“New tank system” means a tank system that will be used to contain an accumulation of regulated substances and for which installation has commenced after January 14, 1987. (See also “Existing Tank System.”)

“Noncarcinogenic risk” means the potential for adverse systemic or toxic effects caused by exposure to noncarcinogenic chemicals of concern, expressed as the hazard quotient.

“Noncommercial purposes” with respect to motor fuel means not for resale.

“Non-drinking water well” means any groundwater well (except an extraction well used as part of a remediation system) not defined as a drinking water well including a groundwater well which is not properly plugged in accordance with department rules in 567—Chapters 39 and 49.

“Nonresidential area” means land which is not currently used as a residential area and which is zoned for nonresidential uses.

“On the premises where stored” with respect to heating oil means UST systems located on the same property where the stored heating oil is used.

“Operational life” refers to the period beginning when installation of the tank system has commenced until the time the tank system is properly closed under rule 135.15(455B).

“Operator” means any person in control of, or having responsibility for, the daily operation of the UST system.

“Overfill release” is a release that occurs when a tank is filled beyond its capacity, resulting in a discharge of the regulated substance to the environment.

“Owner” means:

1. In the case of a UST system in use on July 1, 1985, or brought into use after that date, any person who owns a UST system used for storage, use, or dispensing of regulated substances; and

2. In the case of any UST system in use before July 1, 1985, but no longer in use on that date, any person who owned such UST immediately before the discontinuation of its use.

“Owner” does not include a person, who, without participating in the management or operation of the underground storage tank or the tank site, holds indicia of ownership primarily to protect that person’s security interest in the underground storage tank or the tank site property, prior to obtaining ownership or control through debt enforcement, debt settlement, or otherwise.

“Pathway” means a transport mechanism by which chemicals of concern may reach a receptor(s) or the location(s) of a potential receptor.

“Permanent closure” means removing all regulated substances from the tank system, assessing the site for contamination, and permanently removing tank and piping from the ground or filling the tank in place with a solid inert material and plugging all piping. Permanent closure also includes partial closure of a tank system such as removal or replacement of tanks or piping only.

“Person” means an individual, trust, firm, joint stock company, federal agency, corporation, state, municipality, commission, political subdivision of a state, or any interstate body. “Person” also includes a consortium, a joint venture, a commercial entity, and the United States government.

“Person who conveys or deposits a regulated substance” means a person who sells or supplies the owner or operator with the regulated substance and the person who transports or actually deposits the regulated substance in the underground tank.

“Petroleum UST system” means an underground storage tank system that contains petroleum or a mixture of petroleum with de minimus quantities of other regulated substances. Such systems include those containing motor fuels, jet fuels, distillate fuel oils, residual fuel oils, lubricants, petroleum solvents, and used oils.

“Pipe” or *“piping”* means a hollow cylinder or tubular conduit that is constructed of nonearthen materials.

“Pipeline facilities (including gathering lines)” are new and existing pipe rights-of-way and any associated equipment, facilities, or buildings.

“Point of compliance” means the location(s) at the source(s) of contamination or at the location(s) between the source(s) and the point(s) of exposure where concentrations of chemicals of concern must meet applicable risk-based screening levels at Tier 1 or other target level(s) at Tier 2 or Tier 3.

“Point of exposure” means the location(s) at which an actual or potential receptor may be exposed to chemicals of concern via a pathway.

“Potential receptor” means a receptor not in existence at the time a Tier 1, Tier 2 or Tier 3 site assessment is prepared, but which could reasonably be expected to exist within 20 years of the preparation of the Tier 1, Tier 2 or Tier 3 site assessment or as otherwise specified in these rules.

“Preferential pathway” means conditions which act as a pathway permitting contamination to migrate through soils and to groundwater at a faster rate than would be expected through naturally occurring undisturbed soils or unfractured bedrock including but not limited to wells, cisterns, tile lines, drainage systems, utility lines and envelopes, and conduits.

“Protected groundwater source” means a saturated bed, formation, or group of formations which has a hydraulic conductivity of at least 0.44 meters per day (m/d) and a total dissolved solids of less than 2,500 milligrams per liter (mg/l) or a bedrock aquifer with total dissolved solids of less than 2,500 milligrams per liter (mg/l) if bedrock is encountered before groundwater.

“Receptor” means enclosed spaces, conduits, protected groundwater sources, drinking and non-drinking water wells, surface water bodies, and public water systems which when impacted by chemicals of concern may result in exposure to humans and aquatic life, explosive conditions or other adverse effects on health, safety and the environment as specified in these rules.

“Reference dose” means a designated toxicity value established in these rules for evaluating potential noncarcinogenic effects in humans resulting from exposure to a chemical(s) of concern. Reference doses are designated in Appendix A.

“Regulated substance” means an element, compound, mixture, solution or substance which, when released into the environment, may present substantial danger to the public health or welfare or the environment. Regulated substance includes:

1. Substances designated in Table 302.4 of 40 CFR Part 302 (September 13, 1988),
2. Substances which exhibit the characteristics identified in 40 CFR 261.20 through 261.24 (May 10, 1984) and which are not excluded from regulation as a hazardous waste under 40 CFR 261.4(b) (May 10, 1984),
3. Any substance defined in Section 101(14) of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980 (but not including any substance regulated as a hazardous waste under subtitle C), and
4. Petroleum, including crude oil or any fraction thereof that is liquid at standard conditions of temperature and pressure (60 degrees Fahrenheit and 14.7 pounds per square inch absolute). The term “regulated substance” includes but is not limited to petroleum and petroleum-based substances comprised of a complex blend of hydrocarbons derived from crude oil through processes of separation, conversion, upgrading, and finishing, such as motor fuels, jet fuels, distillate fuel oils, residual fuel oils, lubricants, petroleum solvents, and used oils.

“Release” means any spilling, leaking, emitting, discharging, escaping, leaching or disposing of a regulated substance, including petroleum, from a UST into groundwater, surface water or subsurface soils.

“Release detection” means determining whether a release of a regulated substance has occurred from the UST system into the environment or into the interstitial space between the UST system and its secondary barrier or secondary containment around it.

“Repair” means to restore a tank or UST system component that has caused a release of product from the UST system.

“Residential area” means land used as a permanent residence or domicile, such as a house, apartment, nursing home, school, child care facility or prison, land zoned for such uses, or land where no zoning is in place.

“Residential tank” is a tank located on property used primarily for dwelling purposes.

“Risk-based screening level (RBSL)” means the risk-based concentration level for chemicals of concern developed for a Tier 1 analysis to be met at the point(s) of compliance and incorporated in the Tier 1 Look-up Table in Appendix A.

“SARA” means the federal Superfund Amendments and Reauthorization Act of 1986.

“Septic tank” is a watertight covered receptacle designed to receive or process, through liquid separation or biological digestion, the sewage discharged from a building sewer. The effluent from such receptacle is distributed for disposal through the soil and settled solids and scum from the tank are pumped out periodically and hauled to a treatment facility.

“Site assessment investigation” means an investigation conducted by a registered groundwater professional to determine relevant site historical data, the types, amounts, and sources of petroleum contaminants present, hydrogeological characteristics of the site, full vertical and horizontal extent of the contamination in soils and groundwater, direction and rate of flow of the contamination, ranges of concentration of the contaminants by analysis of soils and groundwater, the vertical and horizontal extent of the contamination exceeding department standards, and the actual or potential threat to public health and safety and the environment.

“Site cleanup report” means the report required to be submitted by these rules and in accordance with department guidance which may include the results of Tier 2 or Tier 3 assessment and analysis.

“Site-specific target level (SSTL)” means the risk-based target level(s) for chemicals of concern developed as the result of a Tier 2 or Tier 3 assessment which must be achieved at applicable point(s) of compliance at the source to meet the target level(s) at the point(s) of exposure.

“Soil leaching to groundwater pathway” means a pathway through soil by which chemicals of concern may leach to groundwater and through a groundwater transport pathway impact an actual or potential receptor.

“Soil plume” means the vertical and horizontal extent of soil impacted by the release of chemicals of concern.

“Soil to plastic water line pathway” means a pathway which leads from soil to a plastic water line.

“Soil vapor to enclosed space pathway” means a pathway through soil by which vapors from chemicals of concern may lead to a receptor creating an inhalation or explosive risk hazard.

“Storm water or wastewater collection system” means piping, pumps, conduits, and any other equipment necessary to collect and transport the flow of surface water run-off resulting from precipitation, or domestic, commercial, or industrial wastewater to and from retention areas or any areas where treatment is designated to occur. The collection of storm water and wastewater does not include treatment except where incidental to conveyance.

“Surface impoundment” is a natural topographic depression, constructed excavation, or diked area formed primarily of earthen materials (although it may be lined with manufactured materials) that is not an injection well.

“Surface water body” means general use segments as provided in 567—paragraph 61.3(1) “a” and designated use segments of water bodies as provided in 567—paragraph 61.3(1) “b” and 567—subrule 61.3(5).

“Surface water criteria” means, for chemicals of concern, the Criteria for Chemical Constituents in Table 1 of rule 567—61.3(455B), except that “1,000 ug/L” will be substituted for the chronic levels for toluene for Class B designated use segments.

“Surface water pathway” means a pathway which leads to a surface water body.

“Tank” is a stationary device designed to contain an accumulation of regulated substances and constructed of nonearthen materials (e.g., concrete, steel, plastic) that provide structural support.

“Target level” means the allowable concentrations of chemicals of concern established to achieve an applicable target risk which must be met at the point(s) of compliance as specified in these rules.

“Target risk” refers to an applicable carcinogenic and noncarcinogenic risk factor designated in these rules and used in determining target levels (for carcinogenic risk assessment, target risk is a separate factor, different from exposure factors, both of which are used in determining target levels).

“Technological controls” means a physical action which does not involve source removal or reduction, but severs or reduces exposure to a receptor, such as caps, containment, carbon filters, point of use water treatment, etc.

“Tier 1 level” means the groundwater and soil levels in the Tier 1 Look-up Table set out in rule 135.9(455B) and Appendix A.

“Tier 1 site assessment” means the evaluation of limited site-specific data compared to the Tier 1 levels established in these rules for the purpose of determining which pathways do not require assessment and evaluation at Tier 2 and which sites warrant a no further action required classification without further assessment and evaluation.

“Tier 2 site assessment” means the process of assessing risk to actual and potential receptors by using site-specific field data and designated Tier 2 exposure and fate and transport models to determine the applicable target level(s).

“Tier 3 site assessment” means a site-specific risk assessment utilizing more sophisticated data or analytic techniques than a Tier 2 site assessment.

“Underground area” means an underground room, such as a basement, cellar, shaft or vault, providing enough space for physical inspection of the exterior of the tank situated on or above the surface of the floor.

“Underground release” means any below-ground release.

“Underground storage tank” or *“UST”* means any one or combination of tanks (including underground pipes connected thereto) that is used to contain an accumulation of regulated substances, and the volume of which (including the volume of underground pipes connected thereto) is 10 percent or more beneath the surface of the ground. This term does not include any:

a. Farm or residential tank of 1100 gallons or less capacity used for storing motor fuel for non-commercial purposes. Iowa Code section 455B.471 requires those tanks existing prior to July 1, 1987, to be registered. Tanks installed on or after July 1, 1987, must comply with all 567—Chapter 135 rules;

b. Tank used for storing heating oil for consumptive use on the premises where stored;

c. Septic tank;

d. Pipeline facility (including gathering lines) regulated under:

(1) The Natural Gas Pipeline Safety Act of 1968 (49 U.S.C. App. 1671, et seq.), or

(2) The Hazardous Liquid Pipeline Safety Act of 1979 (49 U.S.C. App. 2001, et seq.), or

(3) Which is an intrastate pipeline facility regulated under state laws comparable to the provisions of the law referred to in “d”(1) or “d”(2) of this definition;

e. Surface impoundment, pit, pond, or lagoon;

f. Storm-water or wastewater collection system;

g. Flow-through process tank;

h. Liquid trap or associated gathering lines directly related to oil or gas production and gathering operations; or

i. Storage tank situated in an underground area (such as a basement, cellar, mineworking, drift, shaft, or tunnel) if the storage tank is situated upon or above the surface of the floor.

The term “underground storage tank” or “UST” does not include any pipes connected to any tank which is described in paragraphs “a” through “j” of this definition.

“Underground utility vault” means any constructed space accessible for inspection and maintenance associated with subsurface utilities.

“Unreasonable risk to public health and safety or the environment” means the Tier 1 levels for a Tier 1 site assessment, the applicable target level for a Tier 2 site assessment, and the applicable target level for a Tier 3 site assessment.

“Upgrade” means the addition or retrofit of some systems such as cathodic protection, lining, or spill and overfill controls to improve the ability of an underground storage tank system to prevent the release of product.

“UST system” or *“tank system”* means an underground storage tank, connected underground piping, underground ancillary equipment, and containment system, if any.

“Utility envelope” means the backfill and trench used for any subsurface utility line, drainage system and tile line.

“Wastewater treatment tank” means a tank that is designed to receive and treat an influent wastewater through physical, chemical, or biological methods.

567—135.3(455B) UST systems—design, construction, installation and notification.

135.3(1) Performance standards for new UST systems. In order to prevent releases due to structural failure, corrosion, or spills and overfills for as long as the UST system is used to store regulated substances, all owners and operators of new UST systems must meet the following requirements.

a. Tanks. Each tank must be properly designed and constructed, and any portion underground that routinely contains product must be protected from corrosion, in accordance with a code of practice developed by a nationally recognized association or independent testing laboratory as specified below:

- (1) The tank is constructed of fiberglass-reinforced plastic; or

NOTE: The following industry codes may be used to comply with 135.3(1)“a”(1): Underwriters Laboratories Standard 1316, “Standard for Glass-Fiber-Reinforced Plastic Underground Storage Tanks for Petroleum Products”; Underwriters Laboratories of Canada CAN4-S615-M83, “Standard for Reinforced Plastic Underground Tanks for Petroleum Products”; or American Society of Testing and Materials Standard D4021-86, “Standard Specification for Glass-Fiber-Reinforced Polyester Underground Petroleum Storage Tanks.”

- (2) The tank is constructed of steel and cathodically protected in the following manner:

1. The tank is coated with a suitable dielectric material;
2. Field-installed cathodic protection systems are designed by a corrosion expert;
3. Impressed current systems are designed to allow determination of current operating status as required in 135.4(2)“c”; and
4. Cathodic protection systems are operated and maintained in accordance with 135.4(2) or according to guidelines established by the department; or

NOTE: The following codes and standards may be used to comply with 135.3(1)“a”(2): Steel Tank Institute “Specification for STI-P3 System of External Corrosion Protection of Underground Steel Storage Tanks”; Underwriters Laboratories Standard 1746, “Corrosion Protection Systems for Underground Storage Tanks”; Underwriters Laboratories of Canada CAN4-S603-M85, “Standard for Steel Underground Tanks for Flammable and Combustible Liquids,” and CAN4-GO3.1-M85, “Standard for Galvanic Corrosion Protection Systems for Underground Tanks for Flammable and Combustible Liquids,” and CAN4-S631-M84, “Isolating Bushings for Steel Underground Tanks Protected with Coatings and Galvanic Systems”; or National Association of Corrosion Engineers Standard RP-02-85, “Control of External Corrosion on Metallic Buried, Partially Buried, or Submerged Liquid Storage Systems,” and Underwriters Laboratories Standard 58, “Standard for Steel Underground Tanks for Flammable and Combustible Liquids.”

- (3) The tank is constructed of a steel-fiberglass-reinforced plastic composite; or

NOTE: The following industry codes may be used to comply with 135.3(1)“a”(3): Underwriters Laboratories Standard 1746, “Corrosion Protection Systems for Underground Storage Tanks,” or the Association for Composite Tanks ACT-100, “Specification for the Fabrication of FRP Clad Underground Storage Tanks.”

- (4) The tank is constructed of metal without additional corrosion protection measures provided that:

1. The tank is installed at a site that is determined by a corrosion expert not to be corrosive enough to cause it to have a release due to corrosion during its operating life; and

2. Owners and operators maintain records that demonstrate compliance with the requirements of 135.3(1)“a”(4)“1” for the remaining life of the tank; or

- (5) The tank construction and corrosion protection are determined by the department to be designed to prevent the release or threatened release of any stored regulated substance in a manner that is no less protective of human health and the environment than 135.3(1)“a” (1) to (4).

b. Piping. The piping that routinely contains regulated substances and is in contact with the ground must be properly designed, constructed, and protected from corrosion in accordance with a code of practice developed by a nationally recognized association or independent testing laboratory as specified below:

- (1) The piping is constructed of fiberglass-reinforced plastic; or

NOTE: The following codes and standards may be used to comply with 135.3(1)“b”(1): Underwriters Laboratories Subject 971, “UL Listed Non-Metal Pipe”; Underwriters Laboratories Standard 567, “Pipe Connectors for Flammable and Combustible and LP Gas”; Underwriters Laboratories of Canada Guide ULC-107, “Glass Fiber Reinforced Plastic Pipe and Fittings for Flammable Liquids”; and Underwriters Laboratories of Canada Standard CAN 4-S633-M81, “Flexible Underground Hose Connectors.”

- (2) The piping is constructed of steel and cathodically protected in the following manner:

1. The piping is coated with a suitable dielectric material;

2. Field-installed cathodic protection systems are designed by a corrosion expert;

3. Impressed current systems are designed to allow determination of current operating status as required in 135.4(2)“c”; and

4. Cathodic protection systems are operated and maintained in accordance with 135.4(2) or guidelines established by the department; or

NOTE: The following codes and standards may be used to comply with 135.3(1)“b”(2): National Fire Protection Association Standard 30, “Flammable and Combustible Liquids Code”; American Petroleum Institute Publication 1615, “Installation of Underground Petroleum Storage Systems”; American Petroleum Institute Publication 1632, “Cathodic Protection of Underground Petroleum Storage Tanks and Piping Systems”; and National Association of Corrosion Engineers Standard RP-01-69, “Control of External Corrosion on Submerged Metallic Piping Systems.”

- (3) The piping is constructed of metal without additional corrosion protection measures provided that:

1. The piping is installed at a site that is determined by a corrosion expert to not be corrosive enough to cause it to have a release due to corrosion during its operating life; and

2. Owners and operators maintain records that demonstrate compliance with the requirements of 135.3(1)“b”(3)“1” for the remaining life of the piping; or

NOTE: National Fire Protection Association Standard 30, “Flammable and Combustible Liquids Code”; and National Association of Corrosion Engineers Standard RP-01-69, “Control of External Corrosion on Submerged Metallic Piping Systems,” may be used to comply with 135.3(1)“b”(3).

- (4) The piping construction and corrosion protection are determined by the department to be designed to prevent the release or threatened release of any stored regulated substance in a manner that is no less protective of human health and the environment than the requirements in 135.3(1)“b”(1) to (3).

c. Spill and overfill prevention equipment.

(1) Except as provided in subparagraph (2), to prevent spilling and overfilling associated with product transfer to the UST system, owners and operators must use the following spill and overfill prevention equipment:

1. Spill prevention equipment that will prevent release of product to the environment when the transfer hose is detached from the fill pipe (for example, a spill catchment basin); and

2. Overfill prevention equipment that will:

Automatically shut off flow into the tank when the tank is no more than 95 percent full; or

Alert the transfer operator when the tank is no more than 90 percent full by restricting the flow into the tank or triggering a high-level alarm; or

Restrict flow 30 minutes prior to overfilling, alert the operator with a high-level alarm one minute before overfilling, or automatically shut off the flow into the tank so that none of the fittings located on top of the tank are exposed to product due to overfilling.

(2) Owners and operators are not required to use the spill and overfill prevention equipment specified in subparagraph (1) if:

1. Alternative equipment is used that is determined by the department to be no less protective of human health and the environment than the equipment specified in subparagraph (1)“1” or “2” of this paragraph; or

2. The UST system is filled by transfers of no more than 25 gallons at one time.

d. Installation. All tanks and piping must be properly installed in accordance with a code of practice developed by a nationally recognized association or independent testing laboratory and in accordance with the manufacturer’s instructions.

NOTE: Tank and piping system installation practices and procedures described in the following codes may be used to comply with the requirements of 135.3(1)“d”: American Petroleum Institute Publication 1615, “Installation of Underground Petroleum Storage System”; Petroleum Equipment Institute Publication RP100, “Recommended Practices for Installation of Underground Liquid Storage Systems”; or American National Standards Institute Standard 831.3, “Petroleum Refinery Piping,” and American National Standards Institute Standard 831.4, “Liquid Petroleum Transportation Piping System.”

e. Certification of installation. All owners and operators must ensure that one or more of the following methods of certification, testing, or inspection is used to demonstrate compliance with paragraph “d” of this subrule by providing a certification of compliance on the UST notification form in accordance with 135.3(3).

(1) The installer has been certified by the tank and piping manufacturers; or

(2) The installer has been certified or licensed by the department as provided in 567—Chapter 134, Part C; or

(3) The installation has been inspected and certified by a registered professional engineer with education and experience in UST system installation; or

(4) The installation has been inspected and approved by an inspector certified or licensed by the Iowa comprehensive petroleum underground storage tank fund board; or

(5) All work listed in the manufacturer’s installation checklists has been completed; or

(6) The owner and operator have complied with another method for ensuring compliance with paragraph “d” that is determined by the department to be no less protective of human health and the environment.

135.3(2) Upgrading of existing UST systems.

a. Alternatives allowed. Not later than December 22, 1998, all existing UST systems must comply with one of the following requirements:

- (1) New UST system performance standards under 135.3(1);
- (2) The upgrading requirements in paragraphs “b” through “d” below; or
- (3) Closure requirements under rule 135.15(455B), including applicable requirements for corrective action under rules 135.7(455B) to 135.12(455B).

Replacement or upgrade of a tank system on a petroleum contaminated site classified as a high or low risk in accordance with subrule 135.12(455B) shall be a double wall tank or a tank equipped with a secondary containment system with monitoring of the space between the primary and secondary containment structures in accordance with 135.5(4) “g” or other approved tank system or methodology approved by the Iowa comprehensive petroleum underground storage tank fund board.

b. Tank upgrading requirements. Steel tanks must be upgraded to meet one of the following requirements in accordance with a code of practice developed by a nationally recognized association or independent testing laboratory:

- (1) *Interior lining.* A tank may be upgraded by internal lining if:
 1. The lining is installed in accordance with the requirements of 135.4(4), and
 2. Within ten years after lining, and every five years thereafter, the lined tank is internally inspected and found to be structurally sound with the lining still performing in accordance with original design specifications.

- (2) *Cathodic protection.* A tank may be upgraded by cathodic protection if the cathodic protection system meets the requirements of 135.3(1) “a”(2) “2,” “3,” and “4” and the integrity of the tank is ensured using one of the following methods:

1. The tank is internally inspected and assessed to ensure that the tank is structurally sound and free of corrosion holes prior to installing the cathodic protection system; or
2. The tank has been installed for less than ten years and is monitored monthly for releases in accordance with 135.5(4) “d” through “h”; or
3. The tank has been installed for less than ten years and is assessed for corrosion holes by conducting two tightness tests that meet the requirements of 135.5(4) “c.” The first tightness test must be conducted prior to installing the cathodic protection system. The second tightness test must be conducted between three and six months following the first operation of the cathodic protection system; or
4. The tank is assessed for corrosion holes by a method that is determined by the department to prevent releases in a manner that is no less protective of human health and the environment than 135.3(2) “b”(2) “1” to “3.”

- (3) *Internal lining combined with cathodic protection.* A tank may be upgraded by both internal lining and cathodic protection if:

1. The lining is installed in accordance with the requirements of 135.4(4); and
2. The cathodic protection system meets the requirements of 135.3(1) “a”(2) “2,” “3,” and “4.”

NOTE: The following codes and standards may be used to comply with subrule 135.3(2): American Petroleum Institute Publication 1631, “Recommended Practice for the Interior Lining of Existing Steel Underground Storage Tanks”; National Leak Prevention Association Standard 631, “Spill Prevention, Minimum 10-Year Life Extension of Existing Steel Underground Tanks by Lining Without the Addition of Cathodic Protection”; National Association of Corrosion Engineers Standard RP-02-85, “Control of External Corrosion on Metallic Buried, Partially Buried, or Submerged Liquid Storage Systems”; and American Petroleum Institute Publication 1632, “Cathodic Protection of Underground Petroleum Storage Tanks and Piping Systems.”

c. *Piping upgrading requirements.* Metal piping that routinely contains regulated substances and is in contact with the ground must be cathodically protected in accordance with a code of practice developed by a nationally recognized association or independent testing laboratory and must meet the requirements of 135.3(1)“b”(2)“2,” “3,” and “4.”

NOTE: The codes and standards listed in the note following 135.3(1)“b”(2) may be used to comply with this requirement.

d. *Spill and overflow prevention equipment.* To prevent spilling and overfilling associated with product transfer to the UST system, all existing UST systems must comply with new UST system spill and overflow prevention equipment requirements specified in 135.3(1)“c.”

135.3(3) Notification requirements.

a. Except as provided in 135.3(3)“b,” the owner of an underground storage tank existing on or before July 1, 1985, shall complete and submit to the department a copy of the notification form provided by the department by May 1, 1986.

b. The owner of an underground storage tank taken out of operation between January 1, 1974, and July 1, 1985, shall complete and submit to the department a copy of the notification form provided by the department by May 8, 1986, unless the owner knows the tank has been removed from the ground. For purposes of this subrule, “owner” means the person who owned the tank immediately before the discontinuation of the tank’s use.

c. An owner or operator who brings into use an underground storage tank after July 1, 1985, shall complete and submit to the department a copy of the notification form provided by the department within 30 days of installing the tank in the ground. The owner or operator shall not allow the deposit of any regulated substance into the tank without prior approval of the department or until the tank has been issued a tank registration tag and is covered by an approved financial responsibility mechanism in accordance with 567—Chapter 136.

d. All owners and operators of new UST systems must certify in the notification form compliance with the following requirements:

- (1) Installation of tanks and piping under 135.3(1)“e”;
- (2) Cathodic protection of steel tanks and piping under 135.3(1)“a” and “b”;
- (3) Financial responsibility under 567—Chapter 136, Iowa Administrative Code;
- (4) Release detection under 135.5(2) and 135.5(3).

e. All owners and operators of new UST systems must ensure that the installer certifies in the notification form that the methods used to install the tanks and piping comply with the requirements in 135.3(1)“d.”

f. *Exemption from reporting requirement.* Paragraphs “a” to “c” do not apply to an underground storage tank for which notice was given pursuant to Section 103, Subsection c, of the Comprehensive Environmental Response, Compensation and Liabilities Act of 1980. (42 U.S.C. Subsection 9603(c))

g. *Reporting fee.* The notice by the owner to the department under paragraphs “a” to “c” shall be accompanied by a fee of \$10 for each tank included in the notice.

h. *Notification requirement for installing a tank.* A person installing an underground storage tank and the owner or operator of the underground storage tank must notify the department of their intent to install the tank 30 days prior to installation. Notification shall be on a form provided by the department.

i. Notification requirements for a person who sells, installs, modifies or repairs a tank. A person who sells, installs, modifies, or repairs a tank used or intended to be used in Iowa shall notify, in writing, the purchaser and the owner or operator of the tank of the obligations specified in paragraphs 135.3(3) “c” and “j” and the financial assurance requirements in 567—Chapter 136. The notification must include the prohibition on depositing a regulated substance into tanks which have not been registered and issued tags by the department. A standard notification form supplied by the department may be used to satisfy this requirement.

j. It is unlawful for a person to deposit or accept a regulated substance in an underground storage tank that has not been registered and issued permanent or annual tank management tags in accordance with rule 567—135.3(455B).

(1) The department may provide written authorization to receive a regulated substance when there is a delay in receiving tank tags or at new tank installations to allow for testing the tank system.

(2) The department may provide known depositors of regulated substances lists of underground storage tank sites that have been issued tank tags and those that have not been issued tank tags. These lists do not remove the requirement for depositors to verify that current tank tags are affixed to the fill pipe prior to delivering product. Regulated substances cannot be delivered to underground storage tanks without current tank tags.

(3) A person shall not deposit a regulated substance in an underground storage tank after receiving written or oral notice from the department that the tank is not covered by an approved form of financial responsibility in accordance with 567—Chapter 136.

k. If an owner or operator fails to register an underground storage tank within 30 days after installation or obtain annual renewal tags by April 1, the owner or operator shall pay an additional \$250 upon registration of the tank or application for tank tag renewal. The imposition of this fee does not preclude the department from assessing an additional administrative penalty in accordance with Iowa Code section 455B.476.

135.3(4) *Farm and residential tanks.*

a. The owner or operator of a farm or residential tank of 1100 gallons or less capacity used for storing motor fuel for noncommercial purposes is subject to the requirements of this subrule.

b. Farm and residential tanks, installed before July 1, 1987, shall be reported on a notification form by July 1, 1989, but owners or operators are not required to pay a registration fee.

c. Farm and residential tanks that were installed on or after July 1, 1987, shall be in compliance with all the underground storage tank regulations.

135.3(5) *Registration tags and annual management fee.*

a. Tanks of 1100 gallons or less capacity that have registered with the department will be issued a permanent registration tag.

b. The owner or operator of tanks over 1100-gallon capacity must submit a tank management fee of \$65 per tank by January 15 of each year. The owner or operator must also submit written proof that the tanks are covered by an approved form of financial responsibility in accordance with 567—Chapter 136. Upon proper payment of the fee and acceptable proof of financial responsibility, a one-year registration tag will then be issued for the period from April 1 to March 31. The department shall refund a tank management fee if the tank is permanently closed prior to the effective date of April 1 for that year.

c. The owner or operator shall affix the tag to the fill pipe of the underground storage tank where it will be readily visible.

d. A person who conveys or deposits a regulated substance shall inspect the underground storage tank to determine the existence or absence of a current registration tag. If the tag is not affixed to the fill pipe or fill pipe cap, the person may not deposit the substance in the tank.

e. The owner or operator must return the tank tags upon request of the department for failure to meet the requirements of rules 135.3(455B) to 135.5(455B) or the financial responsibility rules in 567—Chapter 136 after permanent tank closure or when tanks are temporarily closed for over 12 months, or when the tank system is suspected to be leaking and the responsible party fails to respond as required in subrule 135.8(1). The department will not return the tags until the tank system is in full compliance with the technical requirements of this chapter and financial responsibility requirements of 567—Chapter 136.

135.3(6) *Petroleum underground storage tank registration amnesty program.*

a. A petroleum underground storage tank required to be registered under 135.3(3) and 135.3(4), which has not been registered prior to July 1, 1988, may be registered under the following conditions:

- (1) The tank registration fee under 135.3(3) “g” shall accompany the registration.
- (2) The storage tank management fee under 135.3(5) shall be paid for past years in which the tank should have been registered.

b. If a tank is registered under this subrule on or prior to October 1, 1989, penalties under Iowa Code section 455B.477 shall be waived.

135.3(7) *Exemption certificates from the environmental charge on petroleum diminution.*

a. An owner or operator of a petroleum underground storage tank that is exempt, deferred, or excluded from regulation under Iowa Code sections 455G.1 to 455G.17, can apply for an exemption certificate from the department to exempt a tank from the environmental charge on petroleum diminution. Exempted tanks include those listed in 135.1(3) “b” and “c” and those excluded in the definition of “underground storage tank” in 135.2(455B). Application for the exemption certificate shall be made on the form provided by the department.

b. An exemption certificate is not required for those classes of tanks that the Iowa comprehensive petroleum underground storage tank fund board has waived from the exemption certificate requirement.

c. The department shall revoke and require the return of the exemption certificate if the petroleum underground storage tank becomes subject to Iowa Code sections 455G.1 to 455G.17.

567—135.4(455B) General operating requirements.

135.4(1) *Spill and overfill control.*

a. Owners and operators must ensure that releases due to spilling or overfilling do not occur. The owner and operator must ensure that the volume available in the tank is greater than the volume of product to be transferred to the tank before the transfer is made and that the transfer operation is monitored constantly to prevent overfilling and spilling.

NOTE: The transfer procedures described in National Fire Protection Association Publication 385 may be used to comply with 135.4(1) “a.” Further guidance on spill and overfill prevention appears in American Petroleum Institute Publication 1621, “Recommended Practice for Bulk Liquid Stock Control at Retail Outlets,” and National Fire Protection Association Standard 30, “Flammable and Combustible Liquids Code.”

b. The owner and operator must report, investigate, and clean up any spills and overfills in accordance with 135.6(4).

135.4(2) Operation and maintenance of corrosion protection. All owners and operators of steel UST systems with corrosion protection must comply with the following requirements to ensure that releases due to corrosion are prevented for as long as the UST system is used to store regulated substances:

a. All corrosion protection systems must be operated and maintained to continuously provide corrosion protection to the metal components of that portion of the tank and piping that routinely contain regulated substances and are in contact with the ground.

b. All UST systems equipped with cathodic protection systems must be inspected for proper operation by a qualified cathodic protection tester in accordance with the following requirements:

(1) *Frequency.* All cathodic protection systems must be tested within six months of installation and at least every three years thereafter or according to another reasonable time frame established by the department; and

(2) *Inspection criteria.* The criteria that are used to determine that cathodic protection is adequate as required by this subrule must be in accordance with a code of practice developed by a nationally recognized association.

NOTE: National Association of Corrosion Engineers Standard RP-02-85, "Control of External Corrosion on Metallic Buried, Partially Buried, or Submerged Liquid Storage Systems," may be used to comply with 135.4(2) "b"(2).

c. UST systems with impressed current cathodic protection systems must also be inspected every 60 days to ensure the equipment is running properly.

d. For UST systems using cathodic protection, records of the operation of the cathodic protection must be maintained (in accordance with 135.4(5)) to demonstrate compliance with the performance standards in this subrule. These records must provide the following:

(1) The results of the last three inspections required in paragraph "c"; and

(2) The results of testing from the last two inspections required in paragraph "b."

135.4(3) Compatibility. Owners and operators must use a UST system made of or lined with materials that are compatible with the substance stored in the UST system.

NOTE: Owners and operators storing alcohol blends may use the following codes to comply with the requirements of subrule 135.4(3): American Petroleum Institute Publication 1626, "Storing and Handling Ethanol and Gasoline-Ethanol Blends at Distribution Terminals and Service Stations"; and American Petroleum Institute Publication 1627, "Storage and Handling of Gasoline-Methanol/Cosolvent Blends at Distribution Terminals and Service Stations."